systems particularly in especially dangerous infections surveillance and than expanded to address all reportable diseases. Development is based on cutting-edge expertise from the Centers for Disease Control and Prevention, Walter Reed Army Institute of Research, and others with more than 100 thousand man-hours of expertise incorporated. Implementation of EIDSS normally takes from 3 to 5 years and involves piloting of a vertical slice, customization to adjust to health priorities, implementation of reports and standard case definitions, building the backbone of the system, establishing evaluation criteria and performance monitoring, and evaluation of the system through test scenarios, table top exercises, legislative reform, etc. Information security is paid close attention to address local legislation on security and personal data protection. Comprehensive training program ranges from basics of computer knowledge to advanced data analysis, and is provided through face-to-face, on-the-job to train-the-trainer and CBT (Computer Based Training) approaches. Early planning of system support, funding, institutionalizing training program is important for successful integral system sustainment.

Results: EIDSS is currently deployed and sustained at more than 350 sites in the Republics of Kazakhstan,Georgia,Azerbaijan,UkraineandArmeniaas a part of the Cooperative Biological Engagement Program (CBEP) sponsored by the U.S. Defense Threat Reduction Agency (DTRA). EIDSS has fully replaced paper reporting with electronic reporting inAzerbaijan-with the rest of the countries on the way to fully accepting the electronic system. Tens of thousand of cases are entered into the EIDSS systems across these countries.

Conclusion: Transformation of national human and veterinary disease surveillance system from paper into integrated electronic form improved timeliness (it takes few minutes to proliferate notification through the system), increased data collection quality through standardized formats, provided ability for integral data analysis at different levels of the national system.

http://dx.doi.org/10.1016/j.ijid.2012.05.282

Type: Poster Presentation

Final Abstract Number: 41.007
Session: Infectious Disease Surveillance
Date: Thursday, June 14, 2012
Time: 12:45-14:15
Room: Poster & Exhibition Area

Burden of dengue infection in children and adults of Bang Phae district, Ratchaburi province: The DVI project in Thailand

P. Chanthavanich[1,*], C. Sirivichayakul[1], K. Limkittikul[1], A. Riewpaiboon[1], A. Sabchareon[1], J. Lim[2], B. Maskery[2], A. Amarasinghe[2], L.J. Da Sliva[2]

[1] *Mahidol University, Bangkok, Thailand*
[2] *International Vaccine Institute, Seoul, Korea, Republic of*

Background: Dengue infection is a major public health problem in Thailand where provincial incidence rates is reported up to 698/100,000 person years. In preparation for the upcoming dengue vaccine, comprehensive data are essential for decision-making for vaccine introduction.

Methods: A comprehensive study sponsored by DVI composed of a passive facility-based surveillance; sero-survey; a healthcare utilization survey; a cost-of-illness (COI) survey; and a vaccine willingness-to-pay (WTP) survey is conducted to determine the evaluated for dengue infection. Among dengue-confirmed cases, the COI survey estimates the economic burden of disease. For the sero-survey, 2000 randomly selected residents are enrolled to determine sero-conversion rate. The WTP and the healthcare utilization surveys assess private demand of dengue vaccines and the proportion of febrile cases missed by the passive surveillance.

Results: During October to December 2011, 108 patients were enrolled in passive fever surveillance in Bang Phae Community Hospital. Among 70 pairs of acute/convalescent blood samples examined using ELISA, 15 cases (21%) of acute dengue infection were found, including 3 primary and 12 secondary infections. There were 8 dengue-confirmed enrollees in the COI survey. Preliminary analysis showed that the private direct out-of-pocket cost per dengue case is fairly high (THB 1,123). The serosurvey will be launched in April 2012, before the dengue transmission peak. Prior to the WTP survey, focus group discussions and a pilot test (40 household interviews) were conducted. It was found that almost all respondents believe that dengue vaccines should be used and that the government should pay for children's vaccinations and cited price as the most important determinant of demand, followed by efficacy. All respondents stated they would purchase dengue vaccines for their youngest child if it is 100THB per dose.

Conclusion: The data generated will be used to build a comprehensive national investment case of dengue vaccine in Thailand, a likely early adopter country of dengue vaccines. The investment case will be used as models for other countries in the respective regions to facilitate accelerated development and introduction of safe and effective dengue vaccines.

http://dx.doi.org/10.1016/j.ijid.2012.05.283

Type: Poster Presentation

Final Abstract Number: 41.008
Session: Infectious Disease Surveillance
Date: Thursday, June 14, 2012
Time: 12:45-14:15
Room: Poster & Exhibition Area

Incidence of invasive *Salmonella* infections in Agogo, Ghana

F. Marks[1], L. Cruz Espinoza[1,*], Y. Adu-Sarkodie[2], N. Sarpong[3], R. Krumkamp[4], W. Loag[4], T.F. Wierzba[1], C. Meyer[4], J. May[5]

[1] *International Vaccine Institute, Seoul, Korea, Republic of*
[2] *School of Medical Sciences, KUMASI, Ghana*
[3] *Kumasi Centre for Collaborative Research in Tropical Medicine, Kumasi, Ghana*
[4] *Bernhard Nocht Institute for Tropical Medicine, Hamburg, Germany*
[5] *Bernhard Nocht Institute for Tropical Medicine, Hamburg, Germany*

Background: The incidence of invasive *Salmonella* bloodstream infections in sub-Saharan Africa remains largely unknown. Comparable data in this region are paramount for public health experts to make evidence-based decisions on the introduction of vaccines against *S.* Typhi and non-typhoidal *Salmonella* (NTS) infections. Consequently, the International Vaccine Institute (IVI) has established standardized surveillance for invasive bloodstream infections at ten sentinel sites in sub-Saharan Africa, including Ghana, to gather these data. Information on two year surveillance to estimate the burden of invasive *Salmonella* infections in Ghana are summarized in this abstract.

Methods: The surveillance site in Ghana is located in the rural town of Agogo (70km east of Kumasi) with an estimated population

of 38,882 inhabitants. Including surrounding areas, approximately 70,000 individuals have access to the Agogo Presbyterian Hospital (APH). The study procedures followed the standardized protocol to ensure comparability of data across African sites and included the conduct of an health-care utilization surveys to adjust the numerator in incidence calculations for frequency of use of the APH. All admitted patients with a history of objective or subjective fever (tympanic fever ≥38°C) and outpatients with objective fever in the past 72 hours were eligible for enrollment. Bacterial diagnoses were conducted using automated blood culture equipment.

Results: From January 2010 to October 2011, 5,134 patients were enrolled. In total, 389 cultures were positive for bacteria, among which 64 were positive for *S.* Typhi (16.5%). The majority (56.5%) of *S.* Typhi infections occurred in children less than 15 years of age. The highest annual incidence for *S.* Typhi was found in the 8-10 years age group (198/100,000). The annual incidence in the 2-<5 and 5-<8 age group was 134/100,000 and 149/100,000, respectively. Non-typhoidal Salmonella (NTS) infections occurred in younger children, with the highest annual incidence of >600/100,000 in children under five years of age.

Conclusion: Our study demonstrates that invasive *Salmonella* infections constitute a significant problem in Ghana, which might also be reflected in other parts of sub-Saharan Africa. Introduction of vaccines against invasive *Salmonella* infections for children should be considered.

http://dx.doi.org/10.1016/j.ijid.2012.05.284

Type: Poster Presentation

Final Abstract Number: 41.009
Session: Infectious Disease Surveillance
Date: Thursday, June 14, 2012
Time: 12:45-14:15
Room: Poster & Exhibition Area

Spatio-temporal dispersion of *Aedes taeniorhynchus* in Florida

M. Falkner[1,*], K.J. Linthicum[2], S.C. Britch[3], L. Mao[4], A. Tatem[4]

[1] *University of Floirida, Gainesville, FL, USA*
[2] *USDA, Gainesville, Fl, USA*
[3] *USDA, Gainesville, FL, USA*
[4] *University of Florida, Gainesville, FL, USA*

Background: *Aedes taeniorhynchus* is normally associated in high numbers with salt marshes along coastal areas in North, Central and South America. It has the potential to be a critical vector of important human and animal arboviruses. St. Louis encephalitis, Everglades, and West Nile viruses have been isolated from it in Florida, and can transmit epizootic strains of Venezuelan equine encephalomyelitis, eastern equine encephalitis, and Rift Valley fever viruses in the lab. To better identify the threat from these viruses we are attempting to better understand the spatio-temporal patterns of *Aedes taeniorhynchus* in Florida.

Methods: Eighteen years of mosquito trap data from Sarasota County, Florida were used for the analyses in this paper. The data, based on systematic mosquito traps, consists of a geographic location coordinates along with mosquito population assessments by species and date. To quantify the spatio-temporal movement of the study species a spatial auto-regressive model was used for analysis. Geographic information system (GIS) software was also used to display and analyze areas with varying population levels.

Results: The highest population numbers for Aedes taeniorhynchus are consistent during the typical Florida summer months of elevated rainfall and temperatures in June, July, and August with July being the peak of the three. Geospatial analysis identified locations that are conducive to consistently high populations of Aedes taeniorhynchus and a quantitative approach showed a marked dispersion to the east to inland areas from the Gulf of Mexico coast over time, particularly from those coastal sites with the highest mosquito numbers. Analyses of interannual differences in mosquito populations will be discussed in relation to environmental conditions such as rainfall and tide levels.

Conclusion: Knowledge of the temporal and spatial distribution of populations of potentially important disease carrying mosquito vectors is important for categorizing areas of varying risk for disease transmission. Since *Aedes taeniorhynchus*is a coastal species with the capacity to transmit indigenous and exotic arboviruses, and there is a potential for an introduction of exotic diseases into the United States through shipping ports, enhanced surveillance and control measures need to be established.

http://dx.doi.org/10.1016/j.ijid.2012.05.285

Type: Poster Presentation

Final Abstract Number: 41.010
Session: Infectious Disease Surveillance
Date: Thursday, June 14, 2012
Time: 12:45-14:15
Room: Poster & Exhibition Area

Impact of immunization against hepatitis B virus in areas of high endemicity in Brazil

G. Figueiredo[1,*], R. Moreira[2], M.R. Cardoso[3], L. Pereira[4], G. Coral[5], A. Stein[5], C. Braga[4], U. Montarroyos[6], R. Ximenes[7]

[1] *Instituto de Medicina Tropical, São Paulo, São Paulo, Brazil*
[2] *INSTITUTO ADOLFO LUTZ, São Paulo, SP, Brazil*
[3] *Universidade de São Paulo, São Paulo, Brazil*
[4] *Universidade Estadual de Pernambuco, Recife, Brazil*
[5] *Santa Casa de Porto Alegre, Porto Alegre, Brazil*
[6] *Faculdade de Ciências Médicas da Universidade de Pernambuco, Recife, Pernambuco, Brazil*
[7] *Universidade de Pernambuco, Pernambuco, Brazil*

Background: The Brazilian government implemented immunization against hepatitis B for infants and children in the western Amazon since 1991, and gradually expanded this to other states considered how high HBV endemicity. Since 1998, the HBV vaccine has been incorporated into the immunization schedule for infants as a national policy and, in 2001, this was broadened to include children and adolescents; more recently until 29 years old. The present study is part of an ongoing population-based hepatitis survey, aimed at estimating the prevalence and predictive factors for HBV infection in all the State capitals from South and Southeast and North region of Brazil, some with highly prevalence of hepatitis B.

Methods: This Cross-sectional population-based household investigation was conducted in 2007- 2008. The inclusion criterion was individuals aged between 10 and 69 years old living in urban areas of the 14 State capitals in the three study regions with estimate population of 20.541.316. The study population was divided in two age strata (10-19) and (20-69) in each area. A random sample was obtained using a stratified multistage cluster sampling strategy, at census tract, block and household level. Blood samples were collected after the interview and specimens tested for antibodies to hepatitis B core antigen (anti-HBc) using enzyme-linked immunoassay – ELISA (AxsymÔ, ABBOTT Laboratories) in central public health laboratories. Outcomes indicating HBV infection were